



# Supercap Racer Kit

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## TOOLS:

- [Soldering iron \(1\)](#)
- [Wire cutter/stripper \(1\)](#)

## PARTS:

- [Supercap Racer Kit \(1\)](#)

## SUMMARY

The Supercap Racer is fast, unpredictable, and fun to build!

Designed by George Albercook (founder of Rocks and Robots) and manufactured by MAKE, the Supercap Racer is a great way to hone your soldering skills, and have some fun.

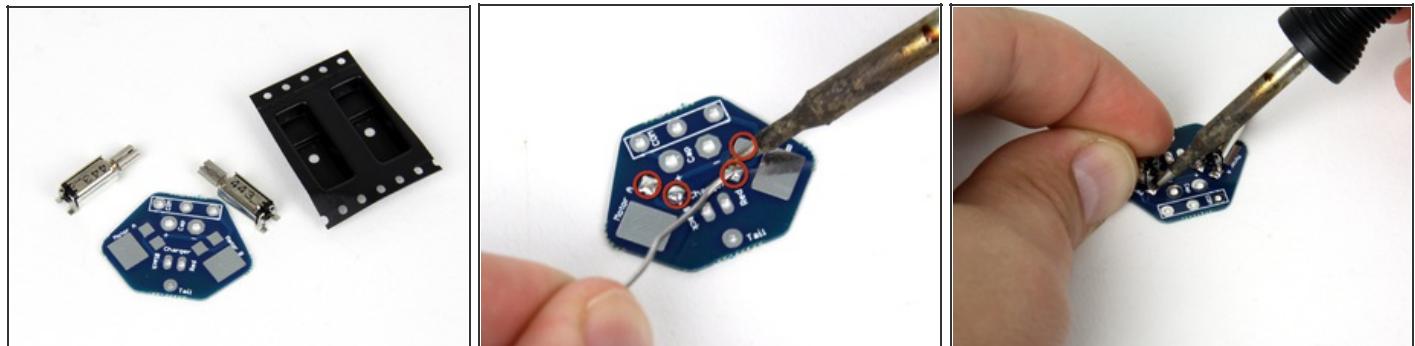
[Supercap Racer Kit Video](#)

## Step 1 — Supercap Racer Kit



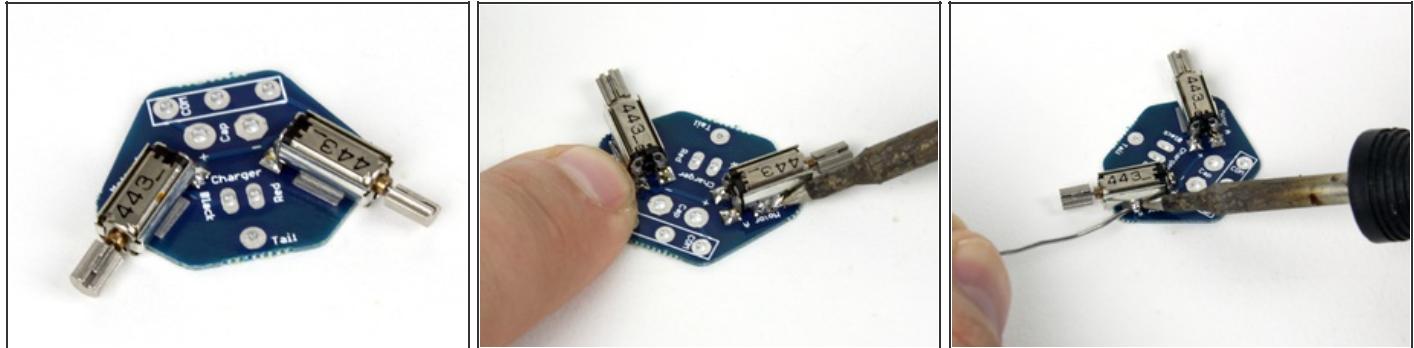
- Start out by checking the kit's contents. You can check it against the product description page in the [Maker Shed](#).
- You are just 9 steps away from having fun!

## Step 2



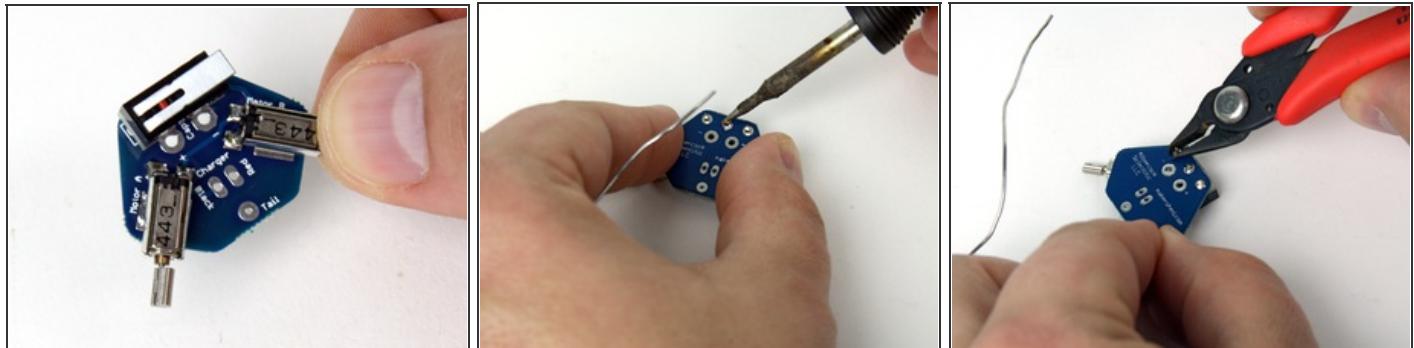
- Start by adding the motors. There are (2) motors and they are soldered to the PCB at locations "Motor A" and "Motor B". The "tabs" of the motors will eventually be soldered to the small square pads on the PCB. There are (4) small square pads on the PCB.
- Start by adding a small amount of solder to the small square pads where the tabs of the motors will sit on the PCB (see red circle markers in picture #2)
- Next, while holding the motor in place, heat the small metal tab of the motor, melting the solder on the PCB. (see picture #3)

### Step 3



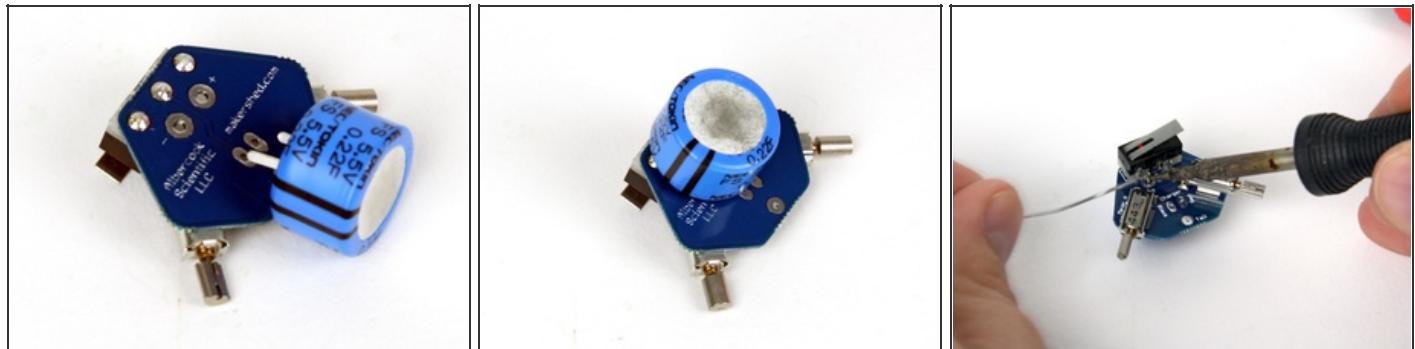
- For added durability, solder the motor holder to the PCB on one edge. No need to solder it on both sides.
- Don't over heat this connection, and make sure the tip of the soldering iron touches the PCB and the motor holder.

### Step 4



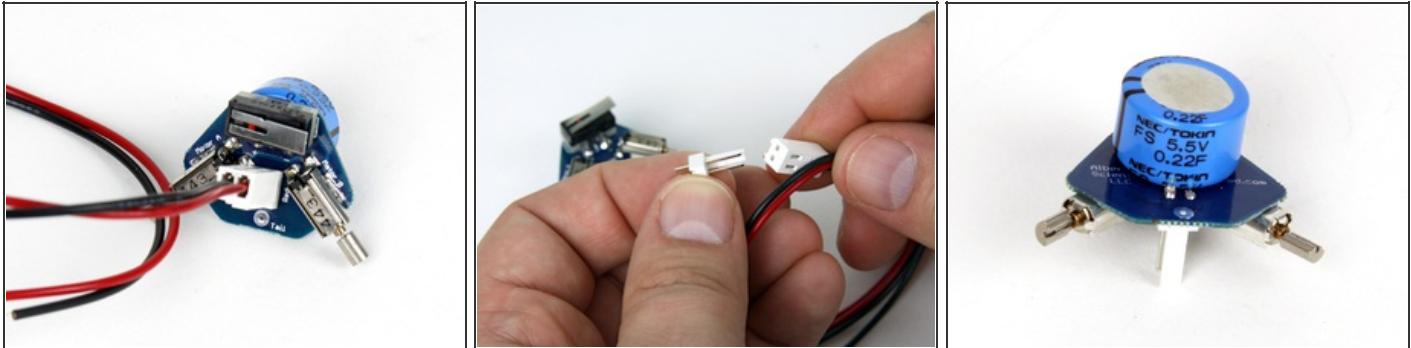
- Now we need to add the switch.
  - Insert the switch from the same side the motors are mounted on.
  - The switch needs to be inserted as pictured.
  - When looking at the switch from the front (as in picture #1) you should see a small red button through the metal tab. This small red button should be on the left side of the switch.
  - The metal tab should angle up towards the right.
  - Solder the switch to the PCB from the back. You might have to hold it down firmly so it lays flat against the PCB.
  - Once soldered, trim the leads of the switch close to the PCB.

## Step 5



- Next it's time to add the supercapacitor.
- The supercap gets inserted into the back of the PCB.
- Make sure the lead marked with the black stripe is inserted into the hole marked with a (-) sign. This super-cap's (-) lead is longer, which is the opposite of most electronics parts, where the longer lead is usually (+).
- One last time! The lead with the black stripe is the (-) lead!
- Flip the board over and solder it in place.
- Followed by a quick trim of the leads.

## Step 6



- Now we need to add the power header.
- The connector should be attached to the wires in your kit. You can see how it can be removed in picture #2. For now keep it attached.
- Insert the connector from the front of the PCB, with the red wire on the right. The PCB is labeled (+) too!
- Flip the PCB over and solder the connector to the board. It will be close to the super-cap, but don't worry; there will be just enough room to solder the connections.

## Step 7



- Now we need to add a tail. Yes, a tail!
- Start by stripping off about 1/8" of the plastic on the supplied wire.
- Next, insert the "tail" wire from the back of the PCB.
- Solder the wire from the front of the PCB and trim it flush.
- Last but not least, add some character to the tail. I made mine into a nice curve.

## Step 8



- Time to add the wheels.
- The rubber caps are great wheels. We just need to trim them a bit shorter.
- You can easily cut them to about 1/4" long.
- Once you cut them, push the part with the rounded end onto the motor's shaft.
- Make sure not to push them on too far. The rubber must not hit the motor's body. (See picture #2.)

## Step 9



- Make the battery pack.
- Start by stripping and twisting the ends of the power supply wires.
- Next solder them to the supplied battery pack. The red wire is (+) and is soldered to the left of the battery pack.
- The black wire is the (-) and gets soldered to the right, as in picture #2.

## Step 10



- Charge it and go!
  - To charge the Supercap Racer, simply plug in the battery pack (it only fits one way) and hold down the switch for 10-20 seconds.
  - Next, unplug the power supply while still holding the switch.
  - Place on a flat surface and let it go!
- Try bending the tail to make it go in a different direction, or charging it a little longer to go faster. Have fun!

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This project first appeared in [MAKE Volume 30](#).

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